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ABSTRACT

Large-scale energy or resource development projects in rural areas cause environmental, social, and economic changes in the community. The negative aspects of these impacts can be mitigated and the positive aspects enhanced, through the use of effective impact management strategies by local and state governments (together and separately), the federal government, and the project developer. Communities undergoing rapid changes related to energy development usually experience a rapid and large population influx and resulting social problems; an overload of existing facilities and services; and pressure for change in the community's economic structure. The major social and economic sectors impacted are: community cohesion and social structure, education, housing, fire and police protection, transportation, utilities, social and health services, recreation, planning and growth management, and funding problems and needs. For each sector the report presents a summary of the most common management tools, techniques, and planning strategies currectly being proposed or implemented in Western United States coal development communities, and discusses three crucial issues in impact management: the community's planning capabilites, the community's acceptance of planning, and obtaining sufficient funding for any needed expansion of public facilities and services. (SB)

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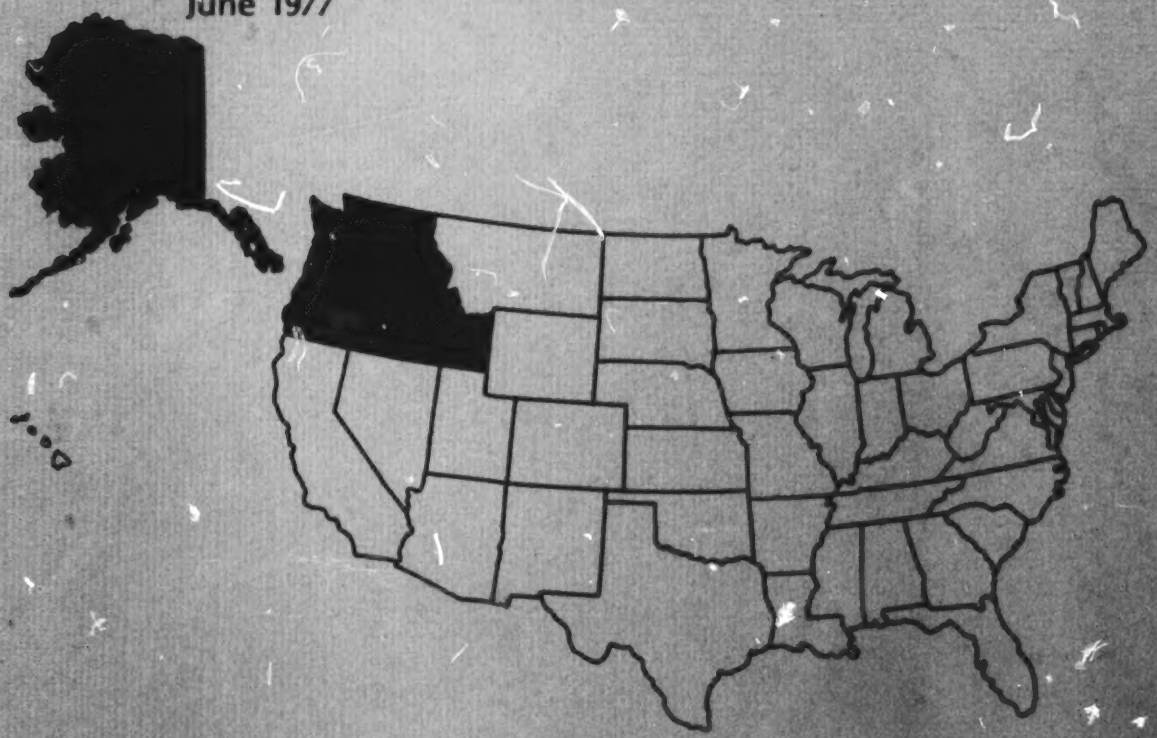

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THE MANAGEMENT OF SOCIAL AND ECONOMIC IMPACTS ASSOCIATED WITH THE CONSTRUCTION OF LARGE-SCALE PROJECTS: EXPERIENCES FROM THE WESTERN COAL DEVELOPMENT COMMUNITIES

by
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June 1977

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INTRODUCTION

The construction and operation of large-scale energy or resource development projects are accompanied by environmental, social, and economic changes or impacts. It is important to understand the implications of these impacts before the project begins, so that private industry, local governments, and citizens can prepare for the changes and avoid negative consequences. Impact assessment is a formal process required by the National Environment Policy Act of 1969 for all federal projects (or projects requiring federal approval). In some states impact assessment is also required before the construction of large projects. Also part of this assessment process is the question of what to do about the impacts once they have been identified and assessed. This paper addresses the question of impact management and discusses management strategies proposed or used for social and economic impacts associated with coal development communities in the West. This effort is part of the Battelle, Pacific Northwest Laboratory, Regional Assessment Program, which is being conducted for the Energy Research and Development Administration.

Impact assessment is the key tool used to determine which impact areas will most severely affect the community and will thus need to be managed. Impact management, only recently recognized as part of the assessment process, includes public and private actions to ameliorate impacts. The use of available impact management strategies can affect the outcome or change in the social and economic environment in a community. Therefore, an inventory of available strategies and the capabilities of local governments to use such strategies should be an integral part of any social and economic impact assessment. This provides a link between impact assessment and management, forming a framework for finding the appropriate solution to each identified problem.

This discussion of impact management and specific strategies begins with a set of definitions:

- Social and economic impacts are changes which occur in the social and economic environments of the studied area as the result of a technological project or development.

- Social and economic impact assessment is the process of identifying and analyzing the social and economic impacts assocated with the development and operation of any potentially environmentally disruptive project.
- Social and economic impact management strategies are tools, techniques or planning strategies which can be used to prevent or mitigate negative social and economic impacts, and which can be used to enhance positive impacts.

Because the focus of this paper is on impact management, we do not discuss specific impact assessments or techniques used in the western coal development areas. Rather, we assume that the reader is familiar with the basics of impact assessment and understands the necessity and importance of assessment in developing appropriate management strategies. (For specific discussion of how to project social and economic impacts see Stenehjem and Metzger, 1976, Volumes I and II.)

The general changes in the social and economic environments that occur in communities undergoing rapid, energy development related growth include:

1. A rapid and relatively large population influx into small rural communities, with some resulting social problems: (a) potential clash of values and lifestyles between newcomers and local residents, with the newcomers usually displaying more urban values, (b) a shortage of jobs and opportunities for the wives of the incoming construction workers, (c) a potential increase in problems such as alcoholism, drug abuse and depression, (d) a lowering in the "quality of life" for both local residents and newcomers, and (e) many community fears of how the rapid change may destroy the existing way of life.
2. An overload on existing public facilities and services caused by the population influx--including housing, schools, utilities, fire, police, health and welfare services; related housing and land use problems (and a general resistance in rural communities to any type of governmental planning); immediate pressure on the communities to find full-time, competent government administrators and/or competent technical advisors; and pressure to find new sources of revenue to cope with the additional service and facility demands.

3. Pressures for change in the economic structure of the community, resulting in (a) a different set of government expenditures and revenues (and the problem of where to find new sources of revenues before the project is complete), (b) an increase in employment in the area (although sometimes local residents leave existing jobs to work on the energy development with a much higher rate of pay, making it difficult to find replacements for them), and (c) an increase in retail and commercial sales for local merchants and, in some cases, the larger corporate enterprises that move in.

It is important to develop strategies to cope with these types of social and economic changes that rapidly growing rural communities are experiencing. Because so many communities in the western region of the U.S. are impacted by energy and resource development, we have compiled a list, based on a review and analysis of the literature, of the strategies most commonly recommended or implemented in this area. We have tried to identify and analyze all studies on managing community impacts caused by coal development, particularly in the rapidly developing areas of Montana and Wyoming. (See the bibliography for a complete listing of the references.) Some of the studies overlap; thus we cite only particularly innovative or useful strategies.

We do not suggest which specific strategy is most appropriate to a community's particular situation. That is determined by such factors as the projected magnitude and severity of the impact, the governmental structure and the various sets of values represented in the community, the agency or developer expected to assume responsibility for the impact, etc. These decisions must be left to each community. Instead, we are presenting this report as a summary of potential management tools, particularly for communities and states outside the study region which are only now beginning to face the very complex issues of how to cope with rapid growth.

Time and resource limitations of this study precluded an examination of the special impacts experienced by the large Native American populations in the study area, as well as any examination of the specific management strategies these impacts would require. The unique and complex nature of Native American culture necessitates that the various affected tribes

themselves provide the needed analyses and recommendations. Site specific impact assessment and management studies should include representatives from affected minorities and subcultures to provide their perspective on the issues.

This report provides an introductory analysis to some of the more complex issues raised by social and economic impact management:

- the fragmentation of government agencies providing technical and financial assistance, and the questions of what the expectations are for these various agencies;
- the coordination of information and assistance among all affected parties, including the local residents;
- the complicated questions of how to generate sufficient additional revenues;
- the interaction of the various specific impact management strategies and their total effect on communities; and
- the question of how to allocate and possibly redistribute the costs and benefits of absorbing and managing community impacts.

These issues will form the core of a follow-on analytical study in which we will propose a conceptual framework for social and economic impact management.

The remainder of this paper is divided into sections corresponding to the major social and economic impacts experienced by rural communities surrounding an energy development. Each section contains a brief introductory description of the types of problems typically associated with the impact sector, and a discussion of management strategies either proposed or implemented for the impact. The management strategies are presented in tabular form, indicating the level of government responsible for implementation.

COMMUNITY COHESION AND SOCIAL STRUCTURE

Community life changes with the influx of large numbers of people. Often the newcomers arrive in the small rural communities with urban values and expectations, values which clash with those of the local residents.

Sometimes local residents resent the presence of construction workers because of the associated changes in quality of life. Prices become inflated; local residents, if they are not working on the project, find that their wages may not be competitive with construction workers'. Ranchers and farmers complain of newcomers' contempt for property rights. Trespassing, open gates, destruction of property, hazing of cattle have all become more common (Gold, 1974). One writer described the situation in Colstrip, Montana: "Newcomers. Riff Raff. Ousiders. No matter what adjective is applied, it is rarely complimentary, and the construction workers and other 'boomers' know they are not welcome--even if their dollars are" (Ambler, 1976).

These problems most affect the retired citizens and other people on fixed income who cannot keep up with inflation. Among the newcomers, problems are most severe for the wives and children of the construction workers and other in-migrating industrial employees. There are neither employment opportunities nor satisfying leisure activities available for large numbers of women and children (Gilmore and Duff, 1975). The problems are often increased for the newcomers by their location in temporary mobile homes scattered throughout the counties. Gilmore states that, in Sweetwater County, such settlements do not encourage newcomers to participate in community life. Rather, alienation and emotional distress discourage social cohesion. Alcoholism, petty crime, educational problems of children, and boredom and psychological problems of the spouse occur in higher proportions among the fringe dwellers (those living in these scattered mobile home settlements) than among people living in established communities (Gilmore and Duff, 1975).

Drunkenness, depression, delinquency and divorce are four of the most common manifestations of the problems experienced, particularly among the newcomers. Together these characteristics are known as the Gillette Syndrome, named after the heavily impacted community in Wyoming (Kohrs, 1973). Other factors which contribute to this syndrome include crowded and unsanitary living conditions, the lack of basic community services, lack of recreational outlets, lack of community identity, impermanence, and long hours at unrewarding tasks (Christiansen and Clack, 1976).

The temporary nature of the work force is a further complication to the problem. Construction workers and their families are less interested in becoming involved in community affairs if they know they will be in the community only for a short period of time. Oldtimers may resent any changes the newcomers expect or demand, knowing that many of the new residents will be leaving the community.

As Fruedenburg (1976) discusses, it is important to look beyond the provision of public services to find solutions to these social problems that occur frequently in boom town situations. He argues that the social problems should be of more concern than they are, and that more attention should be devoted to identifying the factors that are essential to human well-being. As he points out, "One does not need to be a sociologist to know that people rarely attempt or commit suicide because of inadequate sewage facilities" (Fruendenburg, 1976, p. 12). Thus the social problems of both existing residents and the newcomers must be identified, assessed and managed within the framework of the broader effort to manage community impacts.

Table 1 illustrates that at least some attention has been given to these types of impacts. However, further work is needed to develop more preventive measures for some of the social problems that have occurred in the coal development region.

THE EDUCATION SYSTEM

The education system can be one of the most severely impacted areas in communities experiencing rapid growth. Overcrowded classrooms and insufficient teaching staff are two of the primary problems. The magnitude and severity of the impact on the education system is determined by the number of construction workers who move into the area with their families. Sometimes, communities expect severe overloads on their educational facilities, only to find that the construction workers arrive without their families for the duration of the project. For example, in Calvert County, Maryland, where a nuclear plant was constructed, only 250 students were added when the peak construction hit 2,500 workers. For coal development, and in particular

TABLE 1. Impact Management Strategies Proposed or Implemented for Impacts on Community Cohesion and Social Structure

LOCAL STRATEGIES

Local government and groups use radio, T.V. (including cable), news media to inform citizens and to encourage citizen participation and activate community resources (Gilmore and Duff, 1975).

Telephone referral service as information source on community activities (Gilmore, 1975).

Establish new civic institutions to deal with new problems caused by urbanization and conflicting lifestyles. Recommend local funding for two-three persons to study effects of urbanization and coordinate efforts to mitigate negative effects (non-planners).

Establish locally sponsored adult education and career opportunities center (Gilmore and Duff, 1975).

Set up community centers, welcome wagons, hospitality hostess programs.

Establish county-wide outreach program to inform resident about local services and programs, attract new members to volunteer organizations, encourage formation of friendships (Gilmore and Duff, 1975).

Establish community relations commission (Gilmore and Duff, 1975).

STATE STRATEGIES

Local branches of state agencies to facilitate state services and technical assistance to communities.

State university could provide community development technical or research assistance to localities through appropriate department, particularly in identifying social value profile and social problems (University of Montana has such a program--Community Service Program).

State university could set up program training for students to work in communities in human services areas. EXAMPLE: Wyoming Human Services Program at the University of Wyoming. Supported by NIMH grant (Williams, 1976).

JOINT STRATEGY (LOCAL AND STATE)

Local and state colleges and universities develop extension programs in impacted community; provide transportation and child care (Gilmore and Duff, 1975).

TABLE 1. (cont'd)

FEDERAL STRATEGIES

Federal funding sources for various social services. Programs: e.g., National Institute of Mental Health (NIMH) and other programs funded by Department of Health, Education and Welfare (Family Planning; child development--head start and child abuse; alcohol and drug abuse programs (Rapp, 1976).

PROJECT DEVELOPER STRATEGIES

Conduct employee orientation sessions--introduction to area (Gilmore and Duff, 1975).

To minimize social and cultural value conflicts, planners for projects or facilities should seek employees from outside area who share and respect local values and culture (Edwards, et al., 1976; Gold, 1974).

Wheatland, Wyoming: Missouri Basin Power Project set up task force of local officials as means of informing locality about proposed development (Ambler, 1977).

Provide day care services for employee families to encourage women to participate. Contribute to sponsorship of adult education, special newcomer service programs.

Relocation allowances to employees moving to area (Gilmore and Duff, 1975).

Longevity (on job) bonuses (Gilmore and Duff, 1975).

Local affirmative action activity (Gilmore and Duff, 1975).

coal mining where the life of a mine may be 20 to 30 years, it is estimated that there will be about one new student for every new worker (Williams, 1976). An additional projection problem, however, is the accurate determination of what the school age probabilities will be for the construction workers' children and what the adult educational requirements will be for the new population.

As classrooms become overcrowded and the student/teacher ratio increases, double sessions may be used. Portables may be brought in and general community facilities may be used for classroom space temporarily. Maintaining teachers' salaries at a level competitive with salaries offered by industry is also an anticipated problem, according to one author (Bureau of Reclamation and Institute of Applied Research, 1975). However, recruiting teachers is not anticipated to be as severe a problem as in the past, because of declining opportunities elsewhere (Williams, 1976). There will also be an increased need for staff, such as guidance counselors and support staff to the teaching faculty.

Schools may also be in an area where the social effects which occur as a result of coal development will be particularly visible (Gold, 1974). In Colstrip, Montana, school children separated into coalitions of newcomers against local (both Indian and white) children. Teachers' relationships with students were also reportedly less satisfactory than they were when class size was smaller (Gold, 1974).

Newcomers may expect more educational facilities in the community, such as adult education classes, including crafts and practical subjects; expanded library facilities; education facilities to be used to community and interest group meetings; nursery schools and day care centers.

Financing expansions to the education system is the major stumbling block to ameliorating this impact. Long-time property owners and residents are wary of increased taxes and other mechanisms where they pay the costs for the services the newcomers require.

One of the most successful impact management strategies for schools and education facilities is impact payments or prepayment of taxes by the utility or developer (See Myhra, 1976, for a discussion of this technique in connection with the Skagit County, Washington Nuclear Power Plant.). This strategy provides funds early in the development process for the affected communities to expand their educational facilities. Table 2 presents this strategy and several others used to manage school impacts, particularly those associated with the coal development areas in the West.

HOUSING

Housing for construction workers can be a severe problem for a community. Community officials need to know how many workers to expect and when they will arrive. Although it is often difficult to accurately forecast this information, it is possible to develop a range of estimates and alternative plans.

The problems in providing housing for the work force and accompanying families are aggravated by the temporary nature of construction projects. Temporary housing, such as mobile homes, presents special problems in terms of planning, aesthetics, sanitation and utility services (Edwards, et al., 1976). However, perhaps the most severe impacts of mobile homes come from their isolated locations on the outskirts of communities. One writer graphically describes the plight of the mobile home dweller:

> "The mobile homes in squalid fringe settlements have been called 'aluminum ghettos'. Adverse impacts seldom involve the mobile homes themselves, but rather the scattered locations, the lack of laundry and recreation facilities, the dirt paths and lack of trees, and the isolation for wives and children (Williams, 1976, p. 19)."

Builders and local contractors also have difficulty adjusting to the need for immediate and temporary housing. In southwest Wyoming, for example, builders are reluctant to use cost-cutting forms (such as semi-detached row houses or garden apartments) and modular housing cannot be built fast enough to meet the rising demand (Cox, et al., 1976).

TABLE 2. Impact Management Strategies Proposed or Implemented for Impacts on Educational System

	LOCAL STRATEGIES	
Establish consolidated county-wide school districts; means to deploy resources, including tax revenues from industrial plant, more equitably (Bureau of Reclamation and Institute of Applied Research, 1975).	Set up joint taxing districts.	Set up program to periodically report enrollment to developer for school costs related to project (Briscoe, et al., 1974).
Finance formulas should be altered to accommodate sudden influxes of students so as not to penalize individual districts for long periods of time (Talagan and Rapp, 1975).	Collaborate with business and industry and utilize facilities around the clock for community education (Talagan and Rapp, 1975).	Provide portables, temporary facilities, double-shifting before revenues available for new construction.
	STATE STRATEGIES	
State could provide financial aid from various state taxes and programs; utilize funding from mineral royalties and coal severance tax, set up impact office to administer impact funds or grants to schools.	Set up Community Development Authority with bonding service for school construction; tap national bond market. Done in Wyoming (Rapp, 1976).	Provide State loans from Office of Public Instruction (also technical assistance and grants) (Twomey and Kuh, 1974).
Set Education Foundation Program to administer an equalization of state aid to public schools (Rapp, 1976).	Set up state building authority mechanism to lower bond interest rates (Briscoe, et al., 1974).	
	JOINT STRATEGIES	
State or federal government could make available a pool of mobile classrooms which could be moved about as needed.	Also, state and federal agencies could build a pool of circuit-riding teachers to help where needed as construction crews grow (Bureau of Reclamation and Institute of Applied Research, 1975).	
	FEDERAL STRATEGIES	
Federal Impact Funds Law (PLB1-814 and B1-815) provides for school construction and operation in areas affected by federal installation. Oil shale region eligible (Briscoe, et al., 1974).	Department of Health, Education and Welfare can provide technical assistance. Also programs for aid to construct libraries, grants to higher education colleges and universities; vocational training programs (Rapp, 1976).	
	PROJECT DEVELOPER STRATEGIES	
Can guarantee school bonds.	Can prepare taxes to be used to finance expansions in educational system, particularly local school districts.	Can make impact payments to local school districts for children of construction workers and secondary population brought in by project (see Myhra, 1976, for discussion of how this works in Skagit County, Washington, for nuclear power plant development).

The increased demand for housing can cause a severe economic impact on persons with fixed income, such as the elderly, retired and welfare recipients. The increased demand for housing will inflate housing costs, property values and thus property taxes, possibly forcing fixed income residents to relocate.

However, if the housing boom is properly planned and directed, there are positive effects which may result. These include the development of new and architecturally pleasing housing, an increase in existing property value and an increase in business for real estate companies, apartment owners and area builders (Edwards, et al., 1976).

Although housing is usually provided by the private sector, federal and state aid can provide extra funding for low-cost or subsidized modular housing. Project developers can also provide funding and sometimes the needed additional housing itself. Local governments must use their planning tools to guide the housing growth. Table 3 presents the most commonly used management strategies for this impact sector.

POLICE AND FIRE SERVICES

In many rural areas, the fire protection force is composed of volunteers. With the influx of a large population the volunteer force may find it difficult to continue to provide adequate fire protection, particularly for scattered mobile homes and large commercial buildings (Williams, 1976). The problem may be further complicated by the limited town water storage capacity and small water mains (Bureau of Reclamation and Institute of Applied Research, 1975). Also, the population growth may occur outside of corporate jurisdictions, sprawling into the more rural areas of affected counties, and thus make it even more difficult for a volunteer force to guarantee adequate protection.

As population growth occurs, rural fire protection units may require a combination of volunteer and professional crews. A professional fire force and additional equipment will necessitate additional sources of revenues.

TABLE 3. Impact Management Strategies Proposed or Implemented for Housing Impacts

LOCAL STRATEGIES		
Zone and plan for temporary mobile home parks.	Encourage Planned Unit Developments.	Develop subdivision controls.
Establish growth boundaries and service areas for water and sewer.	Develop Growth Phasing.	Encourage local housing contractors to build (with considerable preplanning and strict zoning to avoid "hodge podge" growth). Building activity would have to be coupled with firm, announced programs by local government to insure employment after project construction (Edwards, et al., 1976).
Encourage use of modular building systems.	Provide housing for elderly, people on fixed income in impacted communities.	
STATE STRATEGIES		
Set up a regulatory group like California Local Agency Formation Commission (LAFCO) which controls annexation and formation of new cities and special districts (Gilmore and Duff, 1975).	Develop state mobile home court ordinances, with enforcement powers.	Provide technical assistance to local informing public housing authority, and to private developers.
Set up state grant and load programs for housing assistance.	Develop state design standards for subdivisions.	Set up a state housing authority with the power to sell bonds to obtain money for impact housing financing.
FEDERAL STRATEGIES		
Could set up planning and subsisidized construction loans, tax credits, subsidies to encourage rehabilitation of existing housing, low interest loans, rent subsidies (Talagan and Rapp, 1975).	BLM Organic Act authorities sale of government lands to municipalities or local housing authorities for resale for housing development in impacted areas (Gilmore and Duff, 1974).	Various federal housing and planning programs could be used for technical and financial assistance, particularly Housing Assistance Programs, HUD 701 Program, and Community Development Block Grants.
PROJECT DEVELOPER STRATEGIES		
Finance housing construction could form realty company, low down payments and 10-year buy back provisions. Done in Fort McMurray (University of Denver Research Institute, 1975).	Provide housing for construction workers such as bachelor quarters.	Finance mortgages.
Construct and manage "company towns"; "new towns" (see Myhra, 1976; Peelle, 1976; Ambler, 1977 for discussions of Colstrip and Wheatland).		

In some counties, the "urban" and rural equipment is housed together although the departments work separately, except for emergencies.

> "This arrangement provides uneven protection, much duplication of primary equipment, and a shortage of more expensive specialized equipment." (Bureau of Reclamation and Institute of Applied Research, 1975, p. 64)

A rapid population growth also causes strains and pressures on rural police forces. Much of the new population will come from urban areas and bring their urban values and interpretations of law and order to rural communities. The rapid growth will most likely be accompanied by an increase in crime rates. In Sweetwater County, for example, burglary and larceny increased tremendously with the influx of population. Street prostitution and drug dealing also appeared in the County, causing a new type of problem for residents and the law enforcement officials (Gilmore and Duff, 1975, p. 14). Thus there are common problems of crowded facilities, particularly jails, and of attracting and keeping enough qualified people to serve as deputies and police officers.

The changes in the types of law enforcement problems and the strain on existing facilities can diminish the quality of life for the oldtime residents. Residents report having to lock their houses and cars for the first time; women report reluctance to go out alone; local families avoid bars and other local gathering places (Christiansen and Clack, 1976).

The problems of strains and overloading on police and fire services can be at least partially solved, as with many other public service and facility problems, through additional funding to expand the services. However, this additional funding is most useful when expansion of the service has been carefully planned and timed to meet peak demand. (See section on Financial Tools for a more general discussion of the major issues in financing needed additional public services.) Table 4 presents the management strategies for this impact, which are the most commonly used or recommended in coal development areas. (Several innovative strategies from non-coal development communities are also presented.)

TABLE 4. Impact Management Strategies Proposed or Implemented for Impacts on Police and Fire Services

LOCAL STRATEGIES

Local government can contract or purchase police and fire services from another government (see Williams, 1976).

Counties can require firms to prepay property taxes. Use these taxes to finance additional services such as police and fire (Johnson and White, 1975; Myhra, 1976).

STATE STRATEGIES

State can set up community development authority, as in Wyoming, to loan money to finance public services (Williams, 1976).

FEDERAL STRATEGIES

Various Federal agencies can provide assistance: EDA, Farmers Home Administration, Regional Commissions, Law Enformcement Assistance Agency for technical assistance, Bureau of Mines for mine fires (Rapp, 1976).

LEAA also provides Law Enforcement Planning Grants.

PROJECT DEVELOPER STRATEGIES

Developer can provide fire protection to community. Done by Montana Power in Colstrip (Myhra, 1976).

Developer can make impact payments to community and county for law enforcement. Done by utility for Skagit Nuclear Power Plant (Myhra, 1976).

SOCIAL AND HEALTH SERVICES

An increased demand for health and social services is another result of rapid growth in the coal development areas. There is usually considerable initial pressure on existing area hospitals, family physicians, ambulance services, mental health and community clinic services as the population grows and the services cannot be expanded rapidly enough to meet demands. One of the most serious expansion problems is providing the environment and needed facilities to attract doctors from more urban areas. In fact, one study found that in five of the six counties they surveyed (in the Powder River Region) people were concerned more about the shortage of physicians than any other service inadequacy. It was felt that most of the surveyed communities were too distant from the kinds of services and urban facilities which physicians and their families desire (Bureau of Reclamation and Institute of Applied Research, 1975). Health and social service needs also change as the new population moves in; different occupational health problems arise with which local residents and physicians may be unfamiliar, and there is a greater need for community counseling and treatment facilities for alcohol and drug abuse and mental health problems.

Social services, such as welfare, become more important with the new population. In Rock Springs, for example, welfare workers are constantly busy with short-term case work. The Welfare Director there felt that Rock Springs' problems have not arisen so much from the number of people on welfare at any given time as from the number of people the social workers must work with daily because of the instability of social conditions in the area (NGPRP, 1974, p. 111).

There is also an increased need for nursing home and retirement facilities as older residents retire or become displaced by the social and technological change around them. Community and counseling facilities to deal with the elderly's problems will also become more necessary.

Another population group which can need special counseling and community programs is wives of construction workers and other newcomers to the community, particularly those newcomers who live in the temporary trailer parks and are

isolated from the focal points in community life. There is little work for women in these boom towns and boredom, isolation and depression become real problems for them.

There will also be an increased demand for public health nurses as the population grows. Although, as the population continues to increase, the emphasis will have to be placed more and more on clinic type services, it should still be possible to continue some types of home visits.

The establishment of community health and social service clinics and programs, and special recruitment efforts for doctors and other medical professionals are among the management strategies most often used for the impacts on the health and social service sector of a community. Federal and state aid can supplement local efforts in the recruitment of needed professionals. Table 5 presents a listing of some of the more common strategies used or recommended for this impact.

RECREATION

In the western rural areas of coal development, most recreation has been oriented toward informal outdoor activities such as hunting, fishing and camping. The potential for expanding these types of activities is good. However, new residents associated with energy development-related growth quite often create a demand for more urban-oriented, organized recreation centers and activities and parks. Thus, the lack of recreational facilities and programs creates an impact mostly on new residents, and particularly on women and children (Williams, 1976). The lack of a recreation or community center and organized activities for children tends to increase their boredom and may contribute to the rise in juvenile crime rates in affected communities (Campbell, 1976).

According to one study, if there are existing parks and recreational facilities, there is increased pressure on them due to two factors--the increased number of residents and the improved access to the area's recreational sites. This access opens up area recreation spots to people living outside the immediate area. Thus, the adverse impacts include excess

TABLE 5. Impact Management Strategies Proposed or Implemented for Impacts on Social and Health Services

LOCAL STRATEGIES

Can develop satellite medical centers/group programs.

Develop incentives program to recruit physicians (Williams, 1976).

Establish Health Maintenance Organizations--could be set up by local physicians, with federal assistance, to offer prepaid health care. An HMO offers preventive medicine and does not require hospitalization before it pays for physicians services (Real Estate Research Corporation, 1975).

Counties can provide fast ambulance service to regional hospitals. Concentrate on outpatient care (Bureau of Reclamation and Institute of Applied Research, 1975).

Employ physician assistants and develop ample public health nursing agencies.

Set up social services programs--family planning, alcohol and drug abuse centers, "rent-a-kid," etc.

Build retirement apartments or public housing for elderly close to nursing home--can be encouraged to remain independent of full-time nursing care for as long as possible (Bureau of Reclamation and Insitute of Applied Research, 1975).

STATE STRATEGIES

Run human services project, such as that set up by the University of Wyoming. Provide students with training in social services in impacted communities (Williams, 1976).

Set up interstate helicopter and airplane ambulance network, permitting rapid transport of accident victims to regional hospitals (Bureau of Reclamation and Institute of Applied Research, 1975).

Should be planning to coordinate public health resources operating within the state. Coordination of activities should focus on federal, state and other funds.

State health department may provide technical and financial assistance.

FEDERAL STRATEGIES

Use physicians in public health service to staff rural communities' clinic.

Various federal programs to provide financial assistance. For hospitals and health facilities--EDA, FMHA, Regional commissions, HEW and General Services Administration (Rapp, 1976).

Assistance for social and health services, primarily from HEW programs--Family Health Centers, Emergency Medical Services, Public Health Services Programs, Mental Health, Drug Abuse, Alcohol and Child Development Programs (see RAPP, 1976).

PROJECT DEVELOPER STRATEGIES

Developer can provide mental health, health and medical clinics clinics (Peelle, 1976).

Plant or project medical personnel could hold seminars for benefit of local health professonals--to acquaint them with industrial-related diseases, accidents (Edwards, et al., 1976).

Developer can maintain ambulance, first aid station. Done in Colstrip (Johnson and White, 1975).

Can provide temporary facilities--mobile or modular units which can be used as construction activities, move from one area to another or construct a building to serve as hospital during construction period and then become nursing or retirement home thereafter (Bureau of Reclamation and Institute of Applied Research, 1975).

population pressure and use of available recreation facilities and possible trespassing on adjacent property (Edwards, et al., 1976).

There are several specific community recreation needs generated by energy development-related growth. These include municipal parks, swimming pools, golf courses and tennis courts, ball fields and possibly YMCA-type facilities for teen and adult recreational and fitness programs. Since much of the children's recreation takes place at school, there also will be increased demand for schools to provide adequate gymnasiums, ball fields and athletic equipment.

These needs require recreation planning capabilities, funds and land. In the long term, there usually is abundant land available for local recreation facilities. Funds for such programs, facilities and personnel may be harder to obtain because recreation needs are given a low priority by the local government which is faced with many other demands. It is mainly a local government responsibility to provide recreational facilities and programs. The federal and state governments are sources of funding and may be involved in developing or expanding state or national park facilities in the region. Table 6 lists the types of strategies that have been used or suggested for meeting recreational needs, particularly in the coal development impacted communities.

TRANSPORTATION

There are two general types of transportation impacts related to energy developments. First, the facility itself, during both construction and operation, generates heavy truck or train traffic for moving equipment and products to and from the plant site. Secondly, the movement of people to and from the plant site and within the community generates transportation impacts on the community. According to one study (Edwards, et al., 1976) the largest change in transportation occurs in the highway systems of the town and county near the energy development, since they are impacted by these two sources of traffic. The increased traffic creates congestion on local roads, thus increasing traffic hazards and the need for improved and expanded traffic control. It also speeds up wear and tear on existing

TABLE 6. Impact Management Strategies Proposed or Implemented for Recreation Impacts

LOCAL STRATEGIES

County could form a recreation district; set up a task force to develop a county-wide recreation program package (see Gilmore and Duff, 1975).

Through subdivision and PUD ordinances a community can require certain amounts of recreation or open space in housing and mobile home developments.

Early in development of the energy project, the local government tax base for recreation should be developed (Edwards, et al., 1976).

STATE STRATEGIES

State can purchase land for state parks near the development; state can also develop and maintain parks.

FEDERAL STRATEGIES

Federal programs available to communities for recreation administered by: the Bureau of Land Management, Economic Development Administration, Farmers Home Administration (see Rapp, 1976).

National Parks, if located in region, may be able to expand recreation facilities. U.S. Forest Service could open more lands for hiking, hunting, etc.

PROJECT DEVELOPER STRATEGIES

Developer can provide parks at project sites.

Developer can provide recreation/activity center for impacted community.

EXAMPLE: Montana Power provides parks, community center, handball and basketball courts, gymnasium, weight-lifting room, swimming pool, kitchen, tennis courts, little league fields in Colstrip, Montana (see Myhra, 1976).

In Craig, Colorado, Colorado Ute invested $4 million in a development which included a social and recreational center (see Freudenburg, 1976).

roads, creating the need for more frequent maintenance and repairs. Increased maintenance needs are particularly significant on roads travelled by overweight coal trucks.

Within the community, the demand for new or widened streets and for public parking increases with the growing population. If the growth is permanent, the local and regional transportation network will have to be expanded in all aspects including roads, rail and air (Kutak, et al., 1974). However, often the major growth during construction is temporary, thus complicating the potential solutions to transportation problems.

The impacts on roads and highways outside of the affected local jurisdiction tend to be ignored since they relate more to industry than to people and do not affect everyone in the local jurisdiction or region. Also, such roads are outside the local jurisdiction's funding system and may suffer from rural counties' general lack of funds (Real Estate Research Corporation, 1975).

Due to the rapid growth of the community, there may be an increased demand for taxis, rental cars or transit services. The provision of transit services or the development of a transit system requires expertise and funds at the local level in communities which have not had to deal with this type of service before. Additionally, there may be increased demand or need for rail and air services, usually due to needs of the energy development, or eventually due to demands from the increasingly diversified and sophisticated population.

The handling of transportation impacts or needs usually falls under the jurisdiction of the local governments. While state or federal highways may pass through the region, they are more likely to be able to handle increased or heavy load traffic adequately than are local streets and roads. Thus, local governments are often faced with the need to develop or improve their transportation system on short notice after impacts begin to occur.

Depending on the location of the energy development, the management of transportation impacts may involve local, state, and federal governments. In addition, the developer may play a role in direct plant-related transportation needs.

State and particularly federal roles almost exclusively are limited to providing grants or matching funds to local governments, which in turn develop

and implement plans for road and transit systems. Table 7 provides a list of transportation management strategies and tools recommended or used in the coal development regions of the West.

UTILITIES

There will be impacts on all of the basic utilities in communities faced with rapid growth. While utilities include electricity, telephones, gas, sewer, water and solid waste disposal, only the latter three must be provided directly by local governments. While new residents may suffer most from the lack of adequate utilities, sometimes existing residents are affected adversely also. For example, if demand for water exceeds the capacity of the existing water system, all users must reduce their use of water.

The most severe impacts are felt in the provision of sewer systems or facilities, since there is often little excess capacity to absorb the rapid growth that occurs during project construction. In fact, many small communities have inadequate or incomplete sewer systems, relying on septic tanks and primary treatment plants. Lack of sewer capacity can inhibit building of houses or may encourage more scattered development using septic tanks. Septic tanks limit density and location of housing, possibly precluding optimal development of land in and around the community.

There is an increased demand for water both by the plant itself and by the incoming residents. In areas where the water supply is abundant and of good quality, impacts on the system can be handled more easily than impacts on the sewer system. Often only expansion of the system is required, although potential water pollutants from the plant, mine and solid waste disposal area may create impacts on an existing water supply (Edwards, et al., 1976, p. 126).

Increased solid waste creates the need for expanded or new sanitary land fills. Usually there is abundant land available for such facilities. Demands for other utilities such as gas, electricity, and telephones cause impacts on the private companies or utilities providing the services. Major problems here are in expanding services fast enough to keep pace with the rapid growth.

TABLE 7. Impact Management Strategies Proposed or Implemented for Transportation Impacts

LOCAL STRATEGIES

The community can provide mini-buses to community facilities.

The community can develop a local transit system. Done in Sheridan, Wyoming.

Community can encourage or sponsor jitney or taxi service for intercommunity travel.

STATE STRATEGIES

State provides highway funding: state highways and urban arterials.

In Montana 10 percent of Coal Mines License Tax revenue will be used by state highway department for improvements of highways in coal development areas of the state until July 1, 1979 (Johnson and White, 1975).

JOINT STRATEGIES

The community can set up area transportation coordinating committee early with municipal, plant and state planning personnel (see Edwards, et al., 1976).

Reduce congestion and increase highway safety by traffic signals, striping, safety lighting, extension of shoulders, surface coating, periods of one-way traffic, commuter buses, intensified patrol. Funding sources include state highway fund, the energy company and local street funds (see Williams, 1976).

FEDERAL STRATEGIES

Federal aid programs to develop public transportation and to construct transportation facilities, administered by: Department of Transportation, Department of Housing and Urban Development, Federal Aviation Administration, Economic Development Administration and Farmers Home Administration (see Rapp, 1976 and Williams, 1976).

PROJECT DEVELOPER STRATEGIES

Developer can provide buses for workers from the community to the site. (At Idaho Falls, the ERDA contractor operates buses: cost of 50c to employees; contractor subsidizes balance.) (See Williams, 1976).

Developer can construct and maintain needed local roads. Done by Western Energy Company in Colstrip, Montana (see Johnson and White, 1975).

Developer can stagger shift hours to reduce congestion on roads from energy project to the community (see Williams 1976).

Since all of the basic utilities are needed simultaneously, coordination among responsible agencies and firms is important. In fact, this should encourage such things as combining and undergrounding utility wires, thus reducing the time and cost for each of the utility providers. Substantial lead time is required (12 to 14 months) to plan for and develop or expand sewers and water supply systems. Sewer development particularly requires large amounts of financial assistance. Also, sewer, water and solid waste systems must meet state and federal standards, thus adding a step in the planning and development process. Additionally, private and public utilities (telephone, electricity and natural gas) are regulated by state and federal standards, thereby increasing their response time. Table 8 summarizes ways in which the various locally provided utilities have been managed in the coal development communities.

PLANNING AND GROWTH MANAGEMENT

One of the most critical problems for impacted localities is planning. Few small, rural communities have developed capabilities for the long-range planning that is essential to managing the impending rapid growth from energy development. While planning does not assure that federal, state and local roles all will be coordinated, it does assure that the local area is better prepared to direct and shape the growth induced by the energy development.

In many rural areas, the people reflect an anti-planning bias, which is a major obstacle to developing the local institutional framework and tools needed to prepare for and manage growth. Often local residents do not support, and even oppose, the need for planning. They are not aware of what it is or how it can be used to their benefit. Also, many rural people are opposed to allowing government control over private property, which causes them to view planning as something which will hurt them rather than help them. In addition, these attitudes among existing residents preclude efforts to establish and implement a planning process before growth occurs. Because of these attitudes, goals for planning, development of professional personnel, and a comprehensive approach to planning are usually lacking.

TABLE 8. Impact Management Strategies Proposed or Implemented for Impacts on Utilities

LOCAL STRATEGIES

County can set up special improvement district to finance new sewer system. Done in Colstrip, Montana (Johnson and White. 1975)

County can develop modern integrated system using underground system using underground cabling, multiple use rights-of-way, etc. (Since all requirements must be met simultaneously) (Edwards, et al., 1976).

Counties can require prepayment of taxes by developer to finance utilities (Myhra, 1976; Johnson and White, 1975).

Considerable lead time required. Updated preplanning must project, with some degree of accuracy, the needs and timetable for initial construction. Public and private utility companies should be encouraged and required to develop an implementation schedule which makes these amenities available as needed (Talagan and Rapp, 1975).

Communities may purchase package sewage treatment plants.

STATE STRATEGIES

State can provide assistance for water pollution control, construction and sanitary projects, water supply construction. Done in New Mexico (Rapp, 1976).

States can use some of severance taxes on mining of coal to pay for sewer systems in impacted communities. Done in Wyoming (Williams, 1976).

State can set up Community Development Authority to loan money for water and sewer systems, roads, storm sewers and lighting and other public services. EXAMPLE: Wyoming Community Development Authority (Williams, 1976).

FEDERAL STRATEGIES

Various federal programs which provide financial and technical assistance, esp: EPA "208" Planning for Wastewater Systems, EDA grants and loans for Public Works, HUD Community Development Block Grants, EPA Wastewater Treatment Construction Grants, Farmer's Home Administration water and waste disposal system grants and Community Facilities Loans (see Rapp, 1976 and Williams, 1976).

PROJECT DEVELOPER STRATEGIES

Industrial firms can prepare property taxes to help finance additional needed facilities.

Developer can provide water and sewer facilities for community. Done in Colstrip (Myhra, 1976).

Developer may install package sewage treatment plants.

Prior to rapid growth, the more informal short-range type of planning is sufficient for many communities and even regions that are sparsely settled. However, with growth this approach cannot cope with the demands on local government. Consequently, only the most obvious planning tools are implemented--zoning and subdivision regulations--which are not adequate for growth management.

Two other obstacles to planning in energy-impacted (as well as other) communities are competition and fragmentation among divisions of government and between levels of government. Particularly at the local level where revenues are limited, there may be competition for revenues and little cooperation or coordination among local governments (cities and counties), and school and special districts in their planning and revenue-raising efforts. Additionally, different agencies at the state level and in the federal government often do not coordinate decisions about funding projects at the local level or which affect the local government. Finally, there is also likely to be a lack of coordination in planning among the local, state and federal levels of government. This fragmentation of planning and decision making greatly inhibits efforts at any level to plan for and manage energy development-related community impacts. The Federal Regional Councils have been designated as coordinating mechanisms; however, to date they have been used only in a few cases. (This coordination issue is discussed further in the final section of this report.)

Related to the issue of competition and fragmentation is the uncoordinated approach to planning at the regional level. Impacts usually have regional implications, but there has been little support to date for cooperation among various communities and levels of government to take a broader regional approach to managing energy development-related impacts in their respective communities and areas. As a consequence, narrow local perspectives may only shift problems from one community or area to another or from one group within the community to another.

Another obstacle to planning and managing energy development-related growth is the current structure of planning along functional lines, at all levels of government, but particularly at the federal level from which much

local funding emanates. The separation of planning for sewers, water, and transportation on the one hand and of health care, social services and manpower on the other exacerbate the problems of developing a comprehensive approach to managing impacts. Additionally, planning for each of these needs separately usually spreads local resources (both people and money) so thinly that the efforts suffer in quality. Lacking clearly thought-out goals and priorities, local officials often find themselves setting priorities for managing impacts by such criteria as ease of obtaining federal or state funds, availability of technical assistance or by the loudness of complaints or demonstrated signs of need.

A final obstacle to effective planning is that external factors limit efforts to phase the energy development (Lamont and Jones, 1976). Even if the developer tries to predict the timing and pace of its project, "the economy, inflation, federal legislative and administrative decisions, competing energy sources or international politics can all wreck the best projections" (Lamont and Jones, 1976, p. 8a). While such factors create uncertainty in planning, they emphasize the need for communities to be prepared to respond quickly to changing pressures and demands in a timely fashion.

The question of how to "manage" or deal with the need for local planning capabilities is complex. No one has developed a set of guidelines or strategies that can resolve all of the obstacles to the effective planning and management of local impacts. Planning for community impacts requires involvement of all levels of government and possibly the developer at different stages and in different situations. Thus, it is important that planning for the management of impacts on localities affected by energy developments be recognized as a responsibility to be shared, and a high priority among relevant levels of government.

While most of the actual management of growth and its related impacts falls within the purview of the local governments, both the federal and state governments can play an important role in providing incentives and assistance to comprehensive and effective planning at the local levels. The federal government can provide financial assistance and coordinating mechanisms, while the states can provide technical and some financial assistance and

expanded legal and institutional guidelines or mandates for planning and managing growth and its related impacts at the local level.

While several studies focus specifically on planning (THK Associates, 1975; Cox, et al., 1976) we are focusing on providing a list of the tools for the planning and management growth that have been suggested or used in the coal development areas of the West. Table 9 illustrates that most of the tools that have been used or recommended are at the local level, although incentives for them may emanate from other levels of government. However, this compilation clearly illustrates that the responsibility for community impact management and planning is weighted heavily toward local government. This is an important factor, and should influence efforts by researchers as well as governmental agencies and energy industries to provide assistance to managing impacts associated with energy developments. In short, such assistance efforts should recognize the local role and should be geared to local values and priorities.

FUNDING PROBLEMS AND NEEDS

In addition to adequate planning and growth management capabilities, funding new and expanded services is probably a community's most severe problem stemming from project-related growth. In many cases, the new population arrives before the funding can be obtained and construction begun or completed on the new services or facilities. Large early capital investments are required particularly in the development and expansion of water, sewer and solid waste disposal facilities. A community would need the tax base from a large population to secure bonds to finance the facilities; however, by the time the work force and the secondary population have arrived it is too late and the tax base may still be insufficient. Communities also cannot plan ahead easily when energy projects are tied up in the process of receiving federal approval. An official cannot propose the construction of a public facility to meet a population demand which may never occur. By the time federal approval for an energy project is given, it may be too late to build the needed facility (Lindauer, 1975).

TABLE 9. Impact Management Strategies Proposed or Implemented to Cope with the Need for Planning and Growth Management

LOCAL STRATEGIES

Set up county priorities board with monthly meeting among local officials, citizens and industry reps. Done in Sweetwater County (Gilmore and Duff, 1975).	Use zoning, subdivision controls, flexible land use controls to guide growth.	Use central communities in impacted areas as "home base" which would welcome workers. Done in Rangely, Colorado (Description cited in Fruedenburg, 1976).
Involve industry and citizen participation in early stages and throughout planning process.	Use circuit-riding administrators among small rural communities.	Establish a project coordinator. Done for Trident Nuclear Submarine Base in Washington (Williams, 1976).
Obtain technical assistance from public interest universities, professional groups such as National Association of counties, American Society of Planning Officials, Research Institutes.	Technical assistance for planning, managing, solving problems and carrying out programs should be provided for by: (1) Local agencies get together; decide who leads, (2) Planning agencies employ an outside or third party/technical assistance unit to assume primary responsibility for coordination, trouble-shooting, liaison and related work (Gold, 1975).	Network of planning bodies should be set up at four levels: (1) grass roots or natural community level, (2) settlement (county seat), (3) county level, and (4) multi-county level. Each lower level should have rep. on higher level. Must be interrelated (Gold, 1975).

STATE STRATEGIES

Set up state assistance program to identify federal sources of funds. EXAMPLE: Montana has state-federal coordinator in Washington, D.C. (Twomey and Kuh, 1974).	Need statewide land use planning (Wyoming has locally based state planning legislation).	Set up state impact office with technical assistance team with local advisory bodies (Rapp, 1976).
Establish state plant siting laws--require social and economic impact assessment and management.	Set up state and university sponsored training program in growth management for local government officials (Rapp, 1976).	Set up state Energy Impact Assistance to provide emergency funding and set up State Energy Advisory Councils (Rapp, 1976).
Establish Joint Powers Act. Done in Wyoming.	Establish Interlocal Cooperation Act. Done in Utah.	State departments of local affairs provide technical assistance (Williams, 1976).
Establish state and university consulting groups to provide technical assistance.	State should require energy resource developers to file extensive impact statements accurately detailing the extent and duration of their developments. Statement would include anticipated effects on local government, land use patterns, population and economics (Nellis, 1974).	Establish multi-county planning districts. Done in Utah. Divided states into seven districts. Established uniform data collection and planning base for state agencies (Federal Energy Administration, 1975).
Establish Advisory Council on Local Affairs, formalized mechanism for local input to state policies. Done in Utah (Federal Energy Administration, 1975).		

TABLE 9. (cont'd)

FEDERAL STRATEGIES

Could provide federally funded (by HUD, LEAA, EPA and EDA) local planning staff.

Use Federal Regional Council to coordinate federal, state and local activities (Twomey and Kuh, 1974).

Department of Labor can provide manpower training grants.

HUD, FEA, Office of Coastal Zone Management, Federal Regional Councils, Regional Commissions, Rural Development Service, Department of Interior, National Governors' Conference, provide technical assistance (Williams, 1976).

HUD "701" program, EPA "208" program, FEA Reimbursement Program, Coastal Zone Management, Regional Commissions, EDA, HEW (Health Maintenance Organization program), Intergovernmental Personnel Act provide funds for planning and management (Williams, 1976).

PROJECT DEVELOPER STRATEGIES

Set up an Industrial Association to work with county priorities board (Gilmore and Duff, 1975).

Set up training programs for residents to work on project.

Set up monitoring programs to monitor social and economic impacts.

Provide financial guarantees--direct payments, guarantees of cost recovery, supplementary funding, grants--for planning and management needs.

Set up joint industry--government planning staff.

A more promising source of additional revenues is the project developer. For most types of energy development, local governments immediately adjacent to the energy facility can expect substantially increased property tax revenues from the project once it is complete. For mineral developments, such as western coal developments, the mines will yield substantial revenues in the form of mineral taxes when they go into production. However, funds are needed to expand community services for the peak construction force before these revenues are generated. Also, the revenues generated by the project will often accrue to counties rather than the small communities where much of the impact must be absorbed. Revenues may never accrue to some local governments whose jurisdictional boundaries are outside the range of the project or development, even though those governments may also be absorbing some of the impact.

Financial support for communities and counties facing sudden and rapid growth is also of concern to state and federal officials, as well as the project developer and the communities themselves. There are a series of federal grants and loans for which rural communities are eligible. Problems in obtaining this money center on the community's knowledge of the programs and how to use them, federal priorities for funding, and requirements placed on communities in order to obtain the money. The federal budgetary cycle is also not geared to process applications quickly enough to get the money to rapidly growing communities for maximum effectiveness. States have less impact assistance funds than the federal government, although they can be expected to provide a share of technical assistance. Some more heavily impacted states also provide loans and grants to their impacted communities and have set up special development authorities to deal with the problems (Rapp, 1976). States can also require the project developer to assist in impact mitigation. In Washington State, for example, the State's siting council can require impact monitoring as part of the certification process. Monitored impacts must then comply with the council's prescribed guidelines, or mitigating actions can be required (RCW 80.50.32).

More and more local governments are turning to the utility or project developer to provide the needed additional funding, and in some cases to actually construct or provide the additional services or facilities. When the social and economic impacts experienced by communities result from the

project or development, the sponsor or developer can be expected to absorb some of the impact management costs. Strategies for developer involvement in this funding range from prepayment of taxes to developer-constructed housing, sewer facilities, recreation facilities, etc.

Some developers, such as Montana Power Company in Colstrip, Montana, and the Missouri Basin Power Project (MBPP, a consortium of consumer-owned utilities in eight states) in Wheatland, Wyoming are actively involved in the development and expansion of the communities. MBPP developed, as part of their application to Wyoming's Industrial Siting Council, plans to protect the community "in the traditional trouble areas, including housing, schools, land use planning, mental health, law enforcement, public utilities, child care, old age housing and recreation" (Ambler, 1977, p. 4). MBPP also provided loan guarantees, and technical assistance. Total mitigation costs have been estimated at $20 million, with about $15 million potentially recoverable (Ambler, 1977).

At Colstrip, Montana, Montana Power and its subsidiary Western Energy Company (WEC), operate the town as a company town. Although the utility is not constructing the town itself (it is using contractors and providing construction financing and working capital as needed), all houses were originally rentals with WEC as the landlord. Houses are now offered for sale, and there are plans to allow municipal incorporation and self-government in a few years (Myhra, 1976).

Table 10 presents some of the more useful or innovative strategies for providing funds to impacted communities.

MAJOR ISSUES AND PRELIMINARY FINDINGS

The preceding sections of this report summarized the major types of social and economic impacts that can be expected in communities experiencing rapid growth from energy developments, and the major management strategies recommended or implemented for these impacts. In this section we discuss major issues in successful impact management. These issues transcend specific coal community problems and should be considered as relevant to any small, rural community facing rapid growth, particularly growth from a large construction project. (See particularly Curry, et al., 1977 and Peelle, 1976.)

TABLE 10. Strategies Proposed or Implemented to Provide Financial Assistance for Impact Management

LOCAL STRATEGIES

Revenue Alternatives for Local Governments (developed for Colorado in "Tax Lead Time Study"):
- General sales tax
- Selective sales tax
- Use tax
- Ad valorem property tax
- General occupational tax
- Specific occupational tax
- User fees
- Severance tax
- Local income tax
- Real estate tax
- Site value tax
- Land value increment tax

Non-Monetary Fiscal Devices:
- General obligation bonds
- Revenue bonds
- Special assessment bonds
- Industrial development bonds
- Refunding bonds
- Leasing/installment purchase
- Non-profit corporation
- Special districts
- Local improvement districts
- General improvement districts
- Regional service authorities
- Intergovernmental agreements
- Regional revenue redistribution
- Industry assistance to local governments

(See Briscoe, et al., 1974 for complete discussion).

STATE STRATEGIES

Various state taxing mechanisms can provide funds to impacted communities: severance taxes, royalties taxes (Williams, 1976).

States could add impact tax onto severance tax (Nellis, 1974).

Place coal developments under state taxing district. State could apply either a gross receipts tax similar to one applied to rural electric cooperatives or a property tax based on statewide mill levy. State could then distribute revenues based on net fiscal impact (Luken, 1974).

State could permit debt ceiling to be raised to higher percentage of existing taxable valuation or by converting local assessment policies to reflect higher assessed to full-value rate (Baldwin, 1976).

State can create revolving loan fund, create state bonding authority, state finance agency (Federation of Rocky Mountain States, 1975).

FEDERAL STRATEGIES

Various federal programs provide financial assistance, including programs funded by HEW, Law Enforcement Assistance Administration, Department of Labor, Department of Transportation, EPA, Department of Agriculture, department of Housing and Urban Development, Department of the Interior, Civil Service Commission and Water Resources Council (see Williams, 1976 and Rapp, 1976).

PROJECT DEVELOPER STRATEGIES

Developer can provide various types of financial assistance--direct payments, guarantees of cost recovery, supplementary funding, loan guarantees, outright grants, oprating budget guarantees (Peelle, 1976).

Various analyses (Reiff, 1976; Cox, et al., 1976; Curry, et al., 1977) point to several major elements that are important to a community's success in managing social and economic impacts. These elements include a community's planning capabilities, the acceptance of planning in the community, and sufficient funding for any needed expansion of public facilities and services. It may require outside assistance to ensure the adequacy of the three elements in impacted communities.

PLANNING AND MANAGEMENT CAPABILITIES

Impacted local governments must be willing and committed to planning for and guiding the anticipated rapid growth. The specific planning and management capabilities necessary to cope with growth would vary, of course, depending on the specific community. However, generally such capabilities should include a full-time administrator or planner and a coalition of involved citizens to work with the developer or utility from the very early stages of the project. Many small rural communities do not have such a staff and can experience difficulties gearing up to solve the technical problems rapid growth may bring. Such communities may resent bringing in outsiders to deal with their problems and might prefer to rely on coalitions of community representatives. However, for the most effective planning and management, a community should have a full-time, experienced administrator (Williams, 1976; Reiff, 1976). Additionally, communities may benefit from state and, in some cases, federal technical assistants who could be available for substantial lengths of time in the impacted communities (Rapp, 1976).

Successful impact management and effective community planning depend largely on coordination and communication among all affected parties. To help insure such coordination, all potentially impacted jurisdictions should be included in planning decisions, including school districts, counties and sometimes special districts. Active participation by the project developer and local citizens should also be encouraged, if not required, in the planning and preparation for the impacts. Any organizations set up in the community to prepare for the impacts should be controlled by the local, affected governments so that the organizations represent local interests most directly (Reiff, 1976).

The communication and coordination required as part of a successful impact management effort must also involve state and federal agencies, particularly the planning and energy agencies. More and more states require planning and coordination between the utility and the local governments, through their industrial siting facility laws and councils. The successful management of social and economic impacts can also be required of the utility as a condition of receiving state siting approval. Federal agencies can provide technical and financial assistance to help communities cope with the rapid growth, as noted in the tables throughout the report. In addition, those federal agencies with direct licensing or siting approval powers for projects might require proof of impact management plans or programs as a condition of their license or site certificate. As pointed out by several representatives of federal agencies (Cox, et al., 1976), it will do local communities little good to request massive federal aid to help them with their project-related growth problems unless those communities have well thought-out plans and goals for the accommodation of the new growth. Although the utility is, in most cases, required or requested to pay for the impact management actions, it might be useful for affected communities to demonstrate at least a willingness to plan (with the utility's help) for the social and economic impacts.

The developer of the project (for most energy projects, this is either a private or public utility) is a final participant who is essential to successful communication, coordination and management. The developer must provide accurate and timely information both to local governments and to state and federal agencies. Communities need lead time in which to plan, and they also need sufficient information on which to base their plans. Officials of the Missouri Basin Power Project (MBPP) formalized this information flow process at the time they announced plans for the power plant in Wheatland, Wyoming. At that time they set up a task force of local officials to share information about their proposal. The task force was eventually enlarged to include representatives of the mental health center, the social services office, the schools, the ministry and the youth council (Ambler, 1977).

One further issue affecting coordination among government agencies and project developers is the fragmented nature of local and state governments.

Agencies at each governmental level often lack common objectives and are only loosely coordinated; individual agencies may have incomplete information as to what other agencies at their governmental level are doing. A project developer may initiate contact with one agency; other government agencies may not learn of the proposed development for several months. Such fragmentation results in uninformed public officials, duplication of effort, and insufficient lead time for local and state planning.

COMMUNITY ACCEPTANCE OF PLANNING

An additional factor necessary to effective impact management is that the residents of communities affected by the construction of large projects must be willing to accept the need for planning and advance preparation for the project. Many long-time residents of rural communities, as well as the newcomers moving to a community, will face tremendous changes in their life-styles as the result of the project, which often will decrease the individual's quality of life. To begin to manage successfully some of the social and economic impacts, local residents and newcomers must accept (a) the need for planning to guide and control some of the fast changing aspects of their community, and (b) the need for compromise, negotiation and extra effort to begin to eradicate some of the most severe problems affecting their quality of life.

One policy which may lessen some of the more serious cultural clashes between newcomers and local residents is to have developers screen potential employees to the extent possible. Those demonstrating some respect and sensitivity for rural values would be encouraged to move into the small rural communities. This has been suggested several times in the context of the very small and sometimes isolated coal development communities of the western United States (Edwards, et al., 1976; Gold, 1974). In communities closer to large urban areas it is still important that the community as a whole accept the need to seriously analyze the projected development <u>early</u> in any decision-making process.

ADEQUATE FUNDING

The third element essential to successful impact management is adequate funding. Small communities would find it impossible to generate all needed revenues from their traditional sources given the time frame of most energy developments. Communities which have to plan capital expansions of services such as sewer and water systems will need a substantially increased tax base to generate sufficient bonds to fund the expansions themselves. An increased tax base will most likely come after the additional population has settled; and then there may be insufficient time to develop a system to meet peak demand. One source estimated that it would take from 18 to 24 months to develop a sewer or water system from the planning through construction to the operation phase (Briscoe, et al., 1974:2-5).

Alternative sources for the required additional funding to manage social and economic impacts include state and federal agencies and the project developer. While state agencies often do not have substantial funds to help finance energy development impacted communities' needs, they do have some planning and study funds available. There are also some states which have set up special impact assistance funds for emergencies (see Rapp, 1976). Several states in the West also have policies for the use of the mineral royalties which they receive (e.g., they must be spent on schools and roads) and the severance taxes on the mining of coal (uses range from education to water and sewer systems) (Williams, 1976). In addition, states can set up state development authorities to provide loans and grants to impacted communities. Wyoming has developed and is now operating such an authority (Williams, 1976).

Federal agencies which can provide some type of financial assistance are numerous, depending on the specific project or program to be funded. Planning monies for community development and economic development are available, as well as funds to operate various programs once they are designed. One problem with federal financial assistance, however, is that the slow-moving federal budgetary cycle is not structured to meet the demands of rapidly growing communities. In addition, there are often strict requirements to meet before applicants may become eligible for federal funds, and federal

funding priorities may be such that it is difficult to obtain the needed funding. However since there are numerous programs for which rural communities are eligible this is an important source of financial assistance (see Rapp, 1976 and Williams, 1976 for two discussions of the types of federal aid available).

The project developer can also financially assist impacted communities. In fact, more developers are being required to do so through state siting or local planning requirements. Such assistance includes prepayment of severance and property taxes; special impact payments to affected institutions, such as school districts and law enforcement agencies; loan guarantees, grants for housing and community facilities; and the actual provision of needed services and facilities. Problems of industrial financing of impact management strategies center on the timeliness of the funds, the willingness with which the payments are agreed to and made, and the definition of impact areas the industry should appropriately fund. Wheatland, Wyoming and Colstrip, Montana are two communities where the industry has funded much of the development of the town; although it is still too early to measure the success of these efforts, the workers appear more satisfied (Myhra, 1976).

We have identified three elements--the planning and management capabilities of local communities, the degree of community acceptance of planning, and the funding available for any needed expansion or construction of public facilities and services--as important to successful impact management. Now we consider how to coordinate the impact management strategies for each impact area (housing, recreation, etc.) into an integrated effective plan for an impacted community. The present approach by impact area means that there may be some strategies that work at cross-purposes with others or negate the effect of another strategy. Thus, an interface is needed among all elements and specific strategies in impact management. To clearly define such an interface, a conceptual framework for the process of the management of social and economic impacts is important. Although the choice of specific strategies belongs to officials in the impacted communities, a general framework would provide guidance in understanding the total effect various programs separately or in combination would have on a community. This is particularly important given the earlier descriptions of the lack of coordination, overlap, lack of

timeliness, and poor information flow as problems communities face when attempting to manage impacts.

This report has served as a vehicle to introduce the general issues in impact management--the types of strategies that are being proposed and used today, and the major problems that are arising in the use of these strategies. This introduction will be the starting point for a more comprehensive analysis of impact management, in which a conceptual framework for social and economic impact management will be proposed.

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